

Nov-18-02 07:48pm From:HBS&R  
 09/659,599

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Please amend the application as follows:

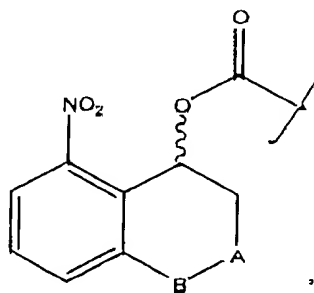
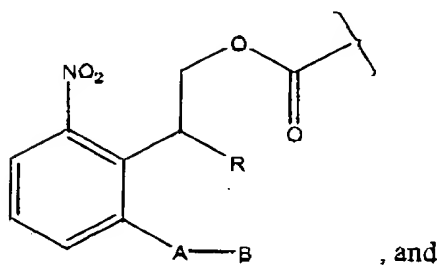
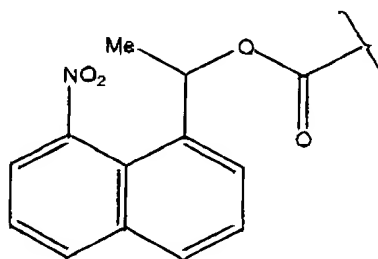
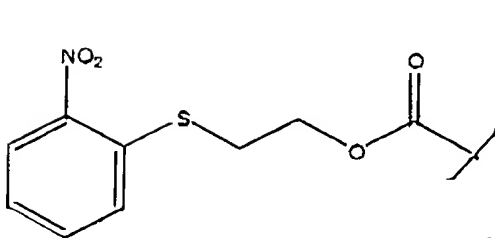
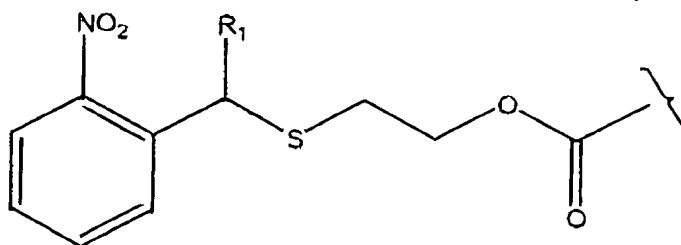
In the Claims

Please amend Claims 1, 5, 7, 8, 14, 30, 32 and 34. Amendments to the claims are indicated in the attached "Marked Up Version of Amendments" (pages i - xv).

1. (Twice Amended) A compound represented by the formula M-Y, wherein:

M is a monomeric building block, a solid surface or a gel having a reactive site that is masked by Y; and

Y is a photolabile protecting group selected from the group consisting of:



wherein:

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the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or  $(CH_2)_n$ ;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

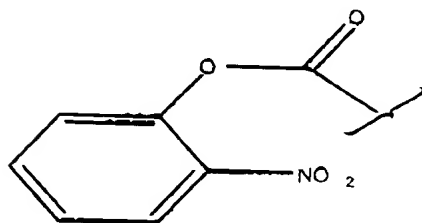
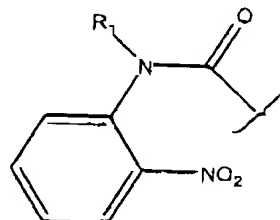
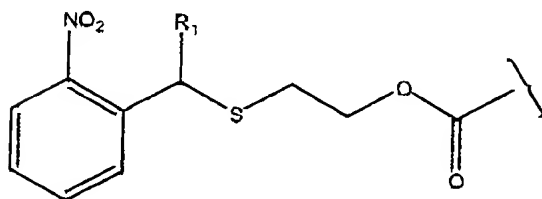
R and R<sub>1</sub> are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

5. (Twice Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

- (a) providing a support with a reactive site;
- (b) binding a first molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub> to the reactive site, wherein:

M<sub>1</sub> is a monomeric building block having a reactive site that is masked by Y<sub>1</sub>; and

Y<sub>1</sub> is a photolabile protecting group selected from the group consisting of:

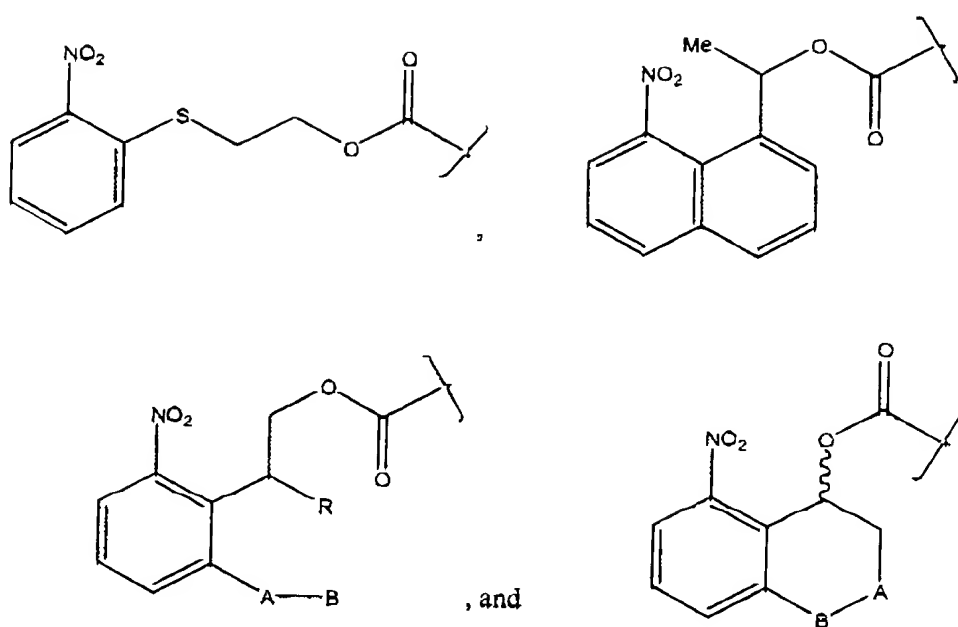


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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or  $(CH_2)_n$ ;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R<sub>1</sub> are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group; and

- (c) removing Y<sub>1</sub> to provide a derivatized support comprising M<sub>1</sub> with an unmasked reactive site immobilized thereon.

7. (Twice Amended) The method of Claim 5, further comprising:

- (a) coupling an additional molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub> to the unmasked reactive site, wherein Y<sub>1</sub> of the additional molecule is selected from the group of photolabile protecting groups listed in Claim 5 and is the same as or different from Y<sub>1</sub> of the first molecule, and M<sub>1</sub> of the additional molecule is a monomeric building block and is the same as or different from M<sub>1</sub> of the first

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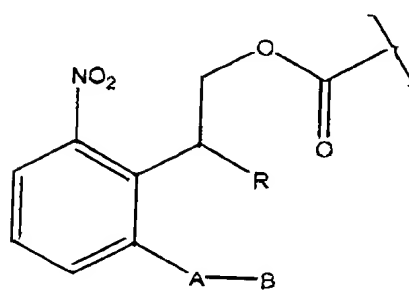
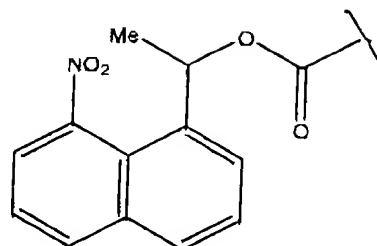
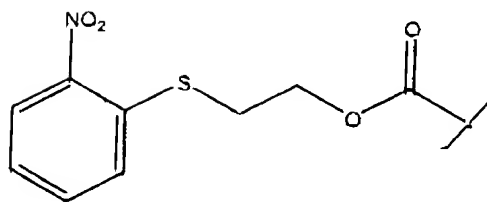
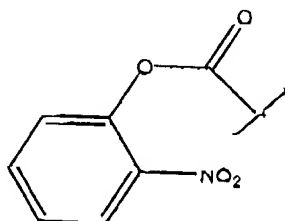
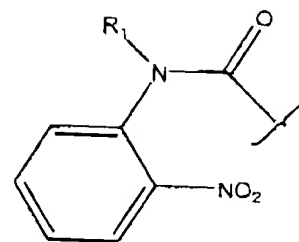
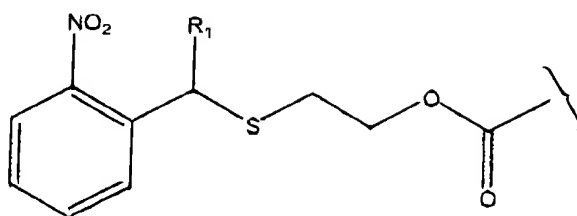
- molecule, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules; and
- (b) removing  $Y_1$  from the additional molecule to provide a derivatized support with a chain of the first and the additional molecules with an unmasked reactive site immobilized thereon.
8. (Twice Amended) The method of Claim 7, further comprising repeating steps (a) and (b) to provide a chain of molecules immobilized on the support.
14. (Twice Amended) A method of forming, from component molecules represented by the formula  $M_1-Y_1$ , a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
  - (b) binding a molecule represented by the formula  $M_1-Y_1$  to the first region;
  - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula  $M_1-Y_1$ , wherein  $M_1$  is the same as or different from  $M_1$  of step (b) and  $Y_1$  is the same as or different from  $Y_1$  of step (b);
  - (d) removing  $Y_1$  from the  $M_1$  that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
  - (e) binding an additional molecule represented by the formula  $M_1-Y_1$  to the said one or more unmasked reactive sites, wherein  $M_1$  is the same as or different from  $M_1$  of steps (b) and (c) and  $Y_1$  is the same as or different from  $Y_1$  of steps (b) and (c); and
  - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula  $M_1-Y_1$ , each compound occupying separate predefined regions of the support;
- wherein:
- $M_1$  is a monomeric building block having a reactive site that is masked by  $Y_1$ ; and  
 $Y_1$  is a photolabile protecting group selected from the group consisting of:

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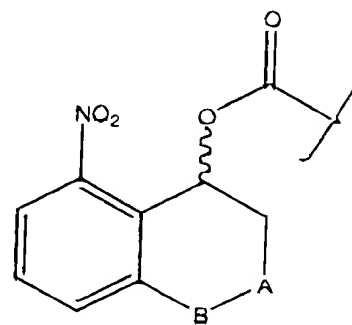
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, and



wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or  $(CH_2)_n$ ;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

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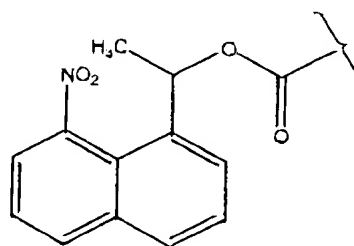
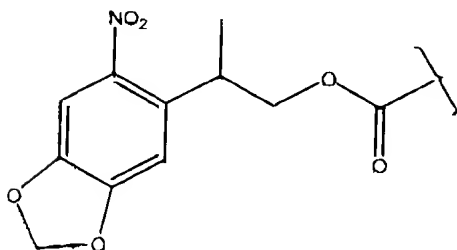
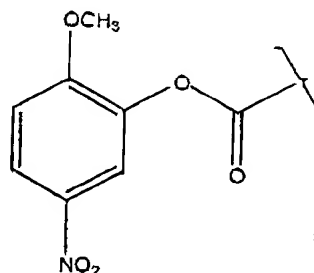
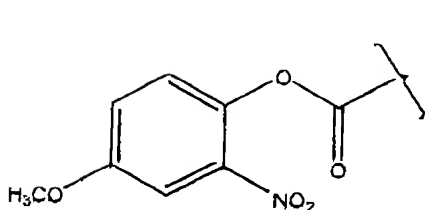
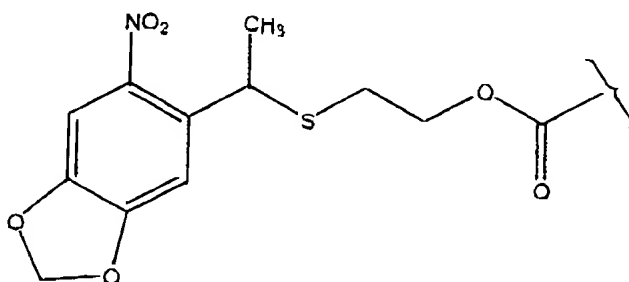
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R and R<sub>1</sub> are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

30. (Amended) A compound represented by the formula M-Y<sub>1</sub>, wherein:

M is a monomeric building block, a solid surface or a gel having a reactive site that is masked by Y<sub>1</sub>; and

Y<sub>1</sub> is selected from the group consisting of:



, and

32. (Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

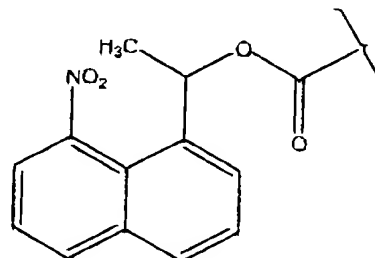
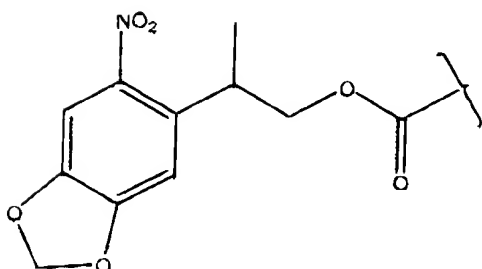
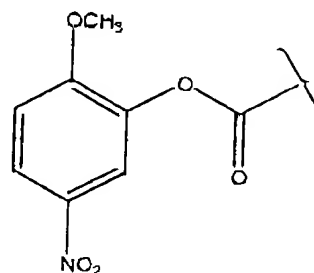
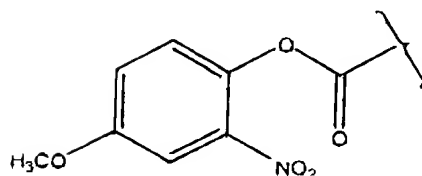
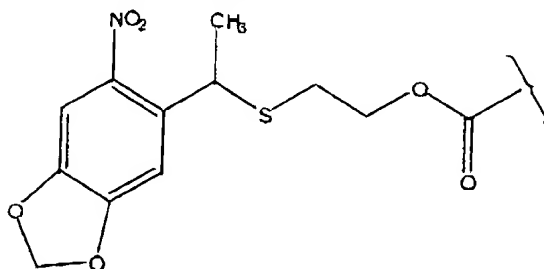
(a) providing a support with a reactive site;

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- (b) binding a first molecule represented by the formula  $M_1-Y_1$  to the reactive site, wherein:

$M_1$  is a monomeric building block having a reactive site that is masked by  $Y_1$ ; and

$Y_1$  is a photolabile protecting group selected from the group consisting of:



, and

- (c) removing  $Y_1$  to provide a derivatized support comprising  $M_1$  with an unmasked reactive site immobilized thereon;
- (d) coupling an additional molecule represented by the formula  $M_1-Y_1$  to the unmasked reactive site, wherein  $Y_1$  and  $M_1$  of the additional molecule are selected independent of the first molecule, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules;

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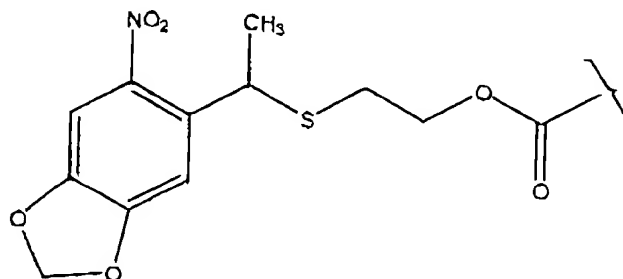
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- (e) removing  $Y_1$  from the additional molecule to provide a derivatized support with a chain of the first and the additional molecules with a second unmasked reactive site immobilized thereon; and
  - (f) repeating steps (d) and (e) with a succession of molecules, to provide a chain of molecules immobilized on the support.
34. (Amended) A method of forming, from component molecules represented by the formula  $M_1-Y_1$ , a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
  - (b) binding a molecule represented by the formula  $M_1-Y_1$  to the first region;
  - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula  $M_1-Y_1$ , wherein  $M_1$  is the same as or different from  $M_1$  of step (b) and  $Y_1$  is the same as or different from  $Y_1$  of step (b);
  - (d) removing  $Y_1$  from the  $M_1$  that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
  - (e) binding an additional molecule represented by the formula  $M_1-Y_1$  to the said one or more unmasked reactive sites, wherein  $M_1$  is the same as or different from  $M_1$  of steps (b) and (c) and  $Y_1$  is the same as or different from  $Y_1$  of steps (b) and (c); and
  - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula  $M_1-Y_1$ , each compound occupying separate predefined regions of the support;

wherein:

$M_1$  is a monomeric building block having a reactive site that is masked by  $Y_1$ ; and  
 $Y_1$  is a photolabile protecting group selected from the group consisting of:



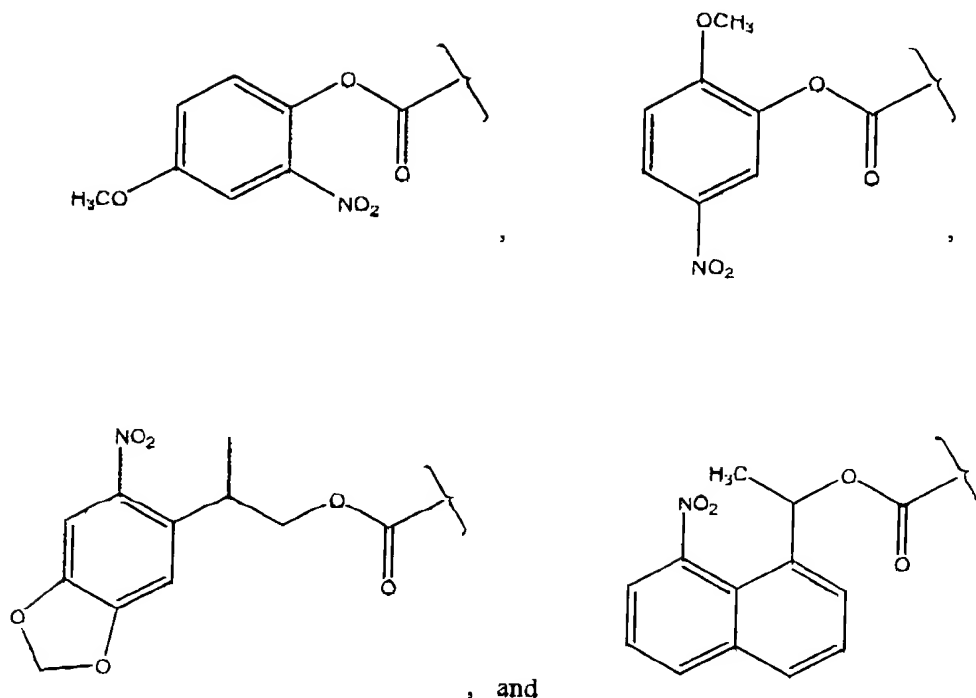


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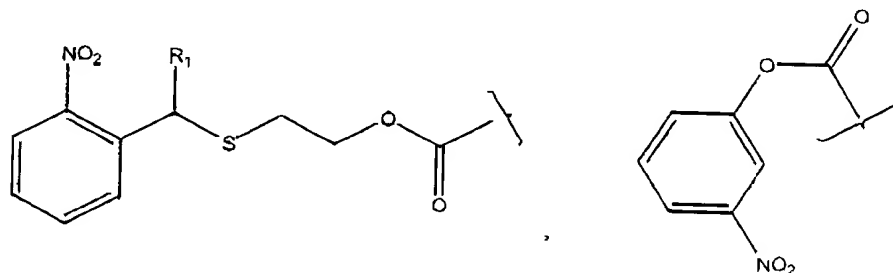
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Please add new Claims 36-38 as follows:

36. (New) A compound represented by the formula M-Y, wherein:  
 M is selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y; and  
 Y is a photolabile protecting group selected from the group consisting of:

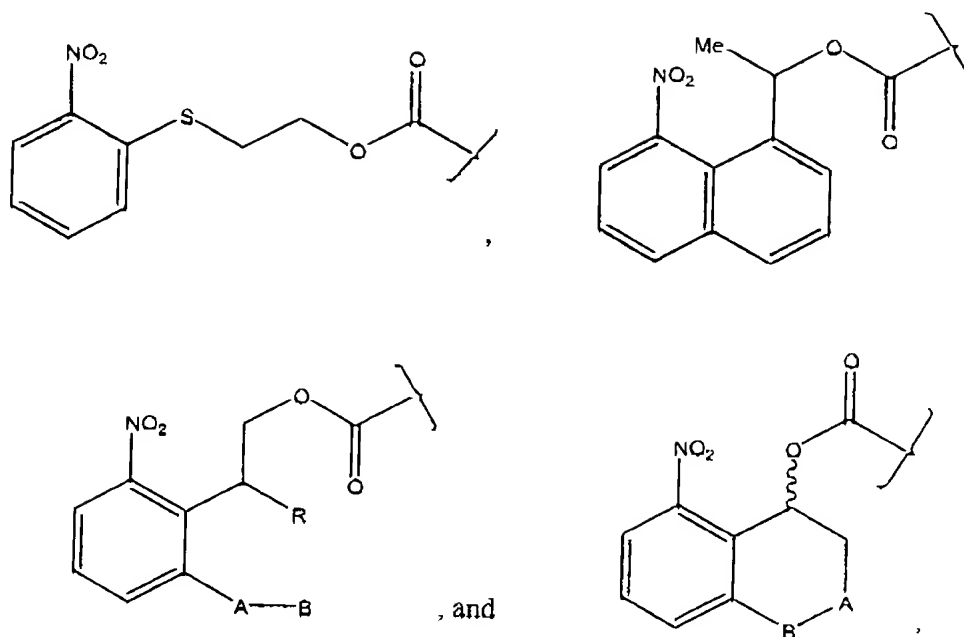


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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or (CH<sub>2</sub>)<sub>n</sub>;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R<sub>1</sub> are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

37. (New) A method of attaching a molecule with a reactive site to a support comprising the steps of:

- providing a support with a reactive site;
- binding a first molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub> to the reactive site, wherein:

M<sub>1</sub> is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y<sub>1</sub>; and

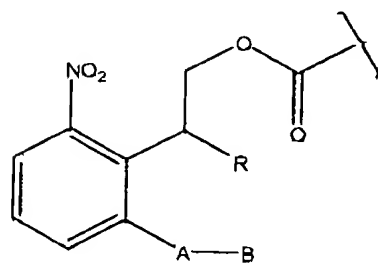
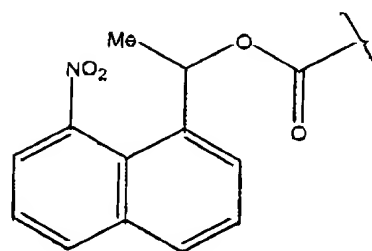
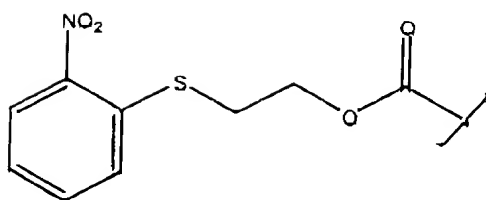
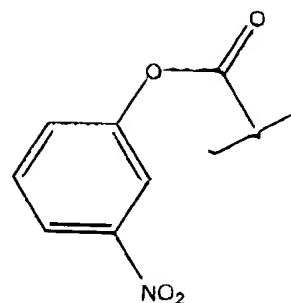
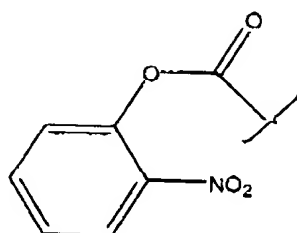
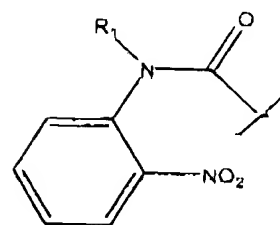
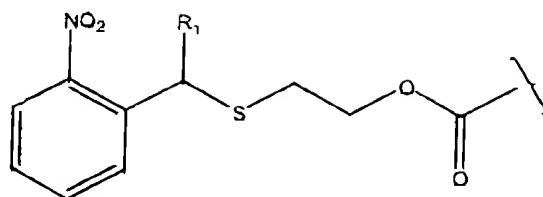
Y<sub>1</sub> is a photolabile protecting group selected from the group consisting of:

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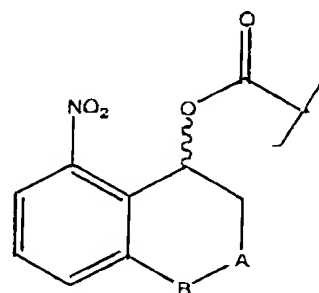
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, and



wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or (CH<sub>2</sub>)<sub>n</sub>;

n is 1 to about 3;

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B is an aprotic, weakly basic group; and

R and R<sub>1</sub> are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group; and

- (c) removing Y<sub>1</sub> to provide a derivatized support comprising M<sub>1</sub> with an unmasked reactive site immobilized thereon.

38. (New) A method of forming, from component molecules represented by the formula M<sub>1</sub>-Y<sub>1</sub>, a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
  - (b) binding a molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub> to the first region;
  - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub>, wherein M<sub>1</sub> is the same as or different from M<sub>1</sub> of step (b) and Y<sub>1</sub> is the same as or different from Y<sub>1</sub> of step (b);
  - (d) removing Y<sub>1</sub> from the M<sub>1</sub> that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
  - (e) binding an additional molecule represented by the formula M<sub>1</sub>-Y<sub>1</sub> to the said one or more unmasked reactive sites, wherein M<sub>1</sub> is the same as or different from M<sub>1</sub> of steps (b) and (c) and Y<sub>1</sub> is the same as or different from Y<sub>1</sub> of steps (b) and (c); and
  - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula M<sub>1</sub>-Y<sub>1</sub>, each compound occupying separate predefined regions of the support;
- wherein:

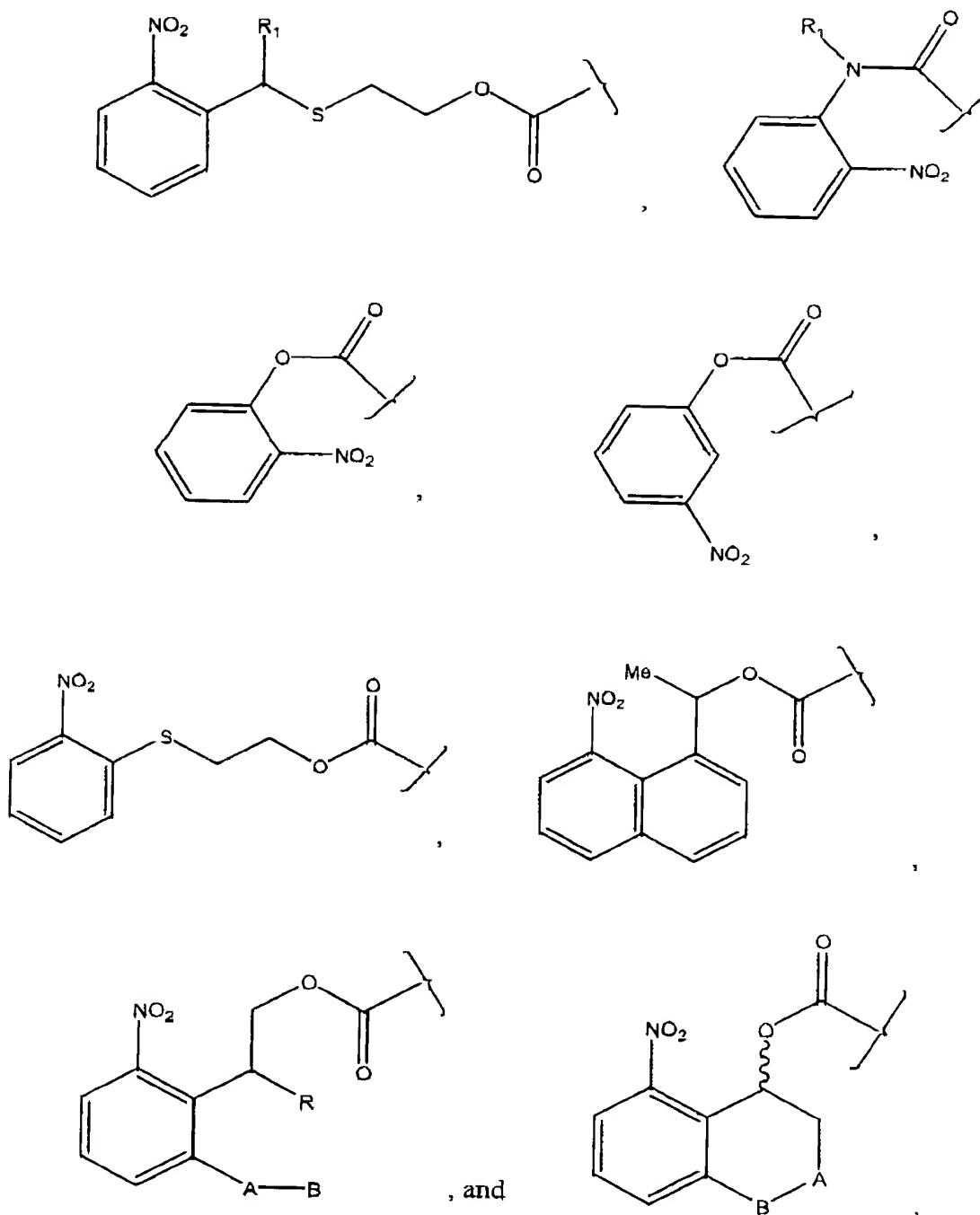
M<sub>1</sub> is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y<sub>1</sub>; and  
Y<sub>1</sub> is a photolabile protecting group selected from the group consisting of:

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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or  $(\text{CH}_2)_n$ ;

n is 1 to about 3;